SUBSURFACE EXPLORATION REPORT

for

ASHBURN PARK PEDESTRIAN BRIDGE

Ashburn Park
Loudoun County PIN 117-40-6216
Ashburn, Virginia

E.M. Tech Project No. 17-3196G

Prepared for:

Loudoun County Government
Department of Parks, Recreation
and Community Services

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Prepared By:

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COMMONWEALTH OF VIRGINIA
SHAHZAD S. MOOSA
Lic. No. 021398
11-9-17
PROFESSIONAL ENGINEER

Date:

November 9, 2017

"This report has been written by a Virginia certified professional engineer as required in Chapter 6 of the Facilities Standards Manual for Loudoun County. This report was developed for submission to the Department of Building and Development which shall be notified, in writing, of any changes (amendments) to this report."

TABLE OF CONTENTS

APPENDICES

1. INTRODUCTION

Engineering & Materials Technologies, Inc. (E.M. Tech) has performed a subsurface exploration at the location of the pedestrian bridge over the north tributary to Beaverdam Run on the southwest trail at Ashburn Park in Ashburn, Virginia. The exploration was performed because the foundations of the existing bridge are to be replaced as part of the stream restoration program and the existing superstructure is to be re-set on newly constructed foundations.

This report summarizes our understanding of the proposed construction, includes the results of our observations during the time of the subsurface exploration, presents the field and laboratory test results, and provides recommendations concerning the design and construction of the proposed pedestrian bridge foundations.

1.1 Authorization

The exploration was conducted in general accordance with the scope of services stated in our proposal, dated September 13, 2017. Mrs. Gita Amiri, CBO, Project Manager/Engineer for the Loudoun County Department of Parks, Recreation, and Community Services, authorized the work.

1.2 Purpose

The purpose of this exploration was to observe the subsurface materials and conditions at the site, to evaluate those materials and conditions with respect to the proposed construction, and to provide recommendations concerning the design and construction of the proposed replacement of the pedestrian bridge foundations.

Please be advised that it was not the purpose of this exploration to perform a fault study, an assessment of site environmental conditions, or to ascertain the potential presence of pollutants in the soil or groundwater.

1.3 Scope

The specific scope of services consisted of: 1) reviewing pertinent geological literature; 2) performing soil test borings; 3) performing laboratory tests on various samples recovered from the borings; 4) analyzing the data; and 5) preparing this report.

1.4 Site Location & Proposed Construction

The existing pedestrian bridge is part of Ashburn Park which is located at 43645 Partlow Road in Ashburn, Virginia. The subsurface exploration was performed at the location of the pedestrian bridge that crosses the north tributary of Beaverdam Run, approximately 300 feet southwest of the playground area. The approximate location of the site is shown on the Site Vicinity Map in Appendix A.

The existing bridge is approximately 8 feet wide by 40 feet long and it consists of a wooden superstructure that is supported by concrete abutments and intermediate supports located approximately at one third of the clear span. The bridge capacity and foundation loads were not available at the time this report was prepared.

2. METHODOLOGY

2.1 Existing Sources of Data

2.1.1 Geological Literature

The following publications were reviewed during the preparation of this report:

"Interpretive Guide to the Use of Soil Maps, Loudoun County, Virginia" published by the Virginia Cooperative Extension Office, Loudoun County, Virginia, 1998

Loudoun County, Virginia, "Weblogis – Online Mapping System"

"Bedrock Map and Geotechnical Properties of Rocks of the Culpeper Basin and Vicinity, Virginia and Maryland" Leavy, B.D., Froelich, A.J., and Abram, E.C., 1983, U.S. Geological Survey

"Digital Geologic Map of Loudoun County, Virginia", Scott Southworth, William C. Burton, J. Stephen Schindler and Albert J. Froelich, 1999

"Loudoun County Guidelines for Placement of Foundations in Plastic Materials", Technical Memorandum dated October 9, 1987, Vaughn Kelly, Chief Building Inspector, County of Loudoun.

Geotechnical engineering reports, prepared by E.M. Tech for other sites in the vicinity, were reviewed.

2.1.2 Project Plans

No grading plans or design plans were available at the time this report was prepared. Therefore, the elevation and grading references in this report were estimated based on the elevations and contours shown in the Loudoun County GIS records.

2.2 Field Exploration

The subsurface conditions were explored by performing two (2) soil test borings; one (1) at each end of the bridge and adjacent to the existing northeast and southwest abutments. The approximate locations of the borings are shown on the Test Boring Location Plan in Appendix A. The borings were advanced to auger refusal on rock. The locations of the borings were selected and staked by E.M. Tech, using on-site landmarks as reference points.

The borings were drilled using an ATV-mounted drill rig. Drilling was performed according to applicable American Society for Testing and Materials (ASTM) standards. Representative soil samples from the borings were obtained using a split-spoon sampling procedure in accordance with ASTM D1586 "Penetration Test and Split-Barrel Sampling of Soils". The subsurface materials encountered at the boring locations were described and classified in accordance with ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)".

Groundwater observations and boring sidewall collapse measurements were recorded while drilling, before casing removal, and after casing removal. Because of the probability of pedestrian traffic, after final groundwater measurements, the borings were backfilled with soil cuttings obtained from the drilling operation. Specific observations and descriptions from each boring are presented on each individual boring log sheet in Appendix B.

2.3 Laboratory Testing

Representative soil samples were collected and transported to our laboratory. Some of the samples were tested and classified in accordance with ASTM D2487, "Classification of Soils for Engineering Purposes". The testing was performed to verify the visual classification of the soils and to provide data

relative to the physical and index properties. Additionally, selected samples were tested for their natural moisture content. The laboratory standard testing methods included the following:

ASTM D422	Particle-Size Analysis of Soils
ASTM D4318	Liquid Limit, Plastic Limit, & Plasticity Index of Soils
ASTM D2487	Classification of Soils for Engineering Purposes
ASTM D2216	Moisture Content of Soil & Rock

The laboratory test results are included in Appendix C, Laboratory Test Results. Some of the results are also shown on the corresponding boring logs.

Please be advised that the soil samples will be stored in our laboratory for a period of 60 days from the date of this report. Unless E.M. Tech receives a specific request, the samples will be discarded after the 60-day period.

3. RESULTS

3.1 Existing Conditions

A brief reconnaissance was performed during the exploration. The pedestrian bridge is situated in a wooded area on an existing trail that connects Ashburn Park and the adjacent residential community.

The topography of the site can be characterized as slightly rolling. The existing ground surface elevations are approximately 242 to 244 feet above Mean Sea Level (MSL). The Test Boring Location Plan in Appendix A shows the ground surface contours as they appeared at the time of the exploration.

3.2 Geology

According to the "Bedrock Map and Geotechnical Properties of Rocks of the Culpeper Basin and Vicinity, Virginia and Maryland" and the "Interpretive Guide to the Use of Soil Maps, Loudoun County, Virginia", the site is located in the Blue Ridge Uplands of the Northern Blue Ridge Physiographic Province of Virginia. The overburden soils in the Piedmont Physiographic Province are generally residual soils; soils that are formed in-place from chemical weathering of the bedrock.

According to the "Digital Geologic Map of Loudoun County, Virginia", the site is underlain by Balls Bluff Siltstone, Fluvial and Deltaic Sandstone and Siltstone. The bedrock is described as reddish-brown, thin to medium-bedded, feldspathic, locally cross-bedded, fine- to medium-grained silty sandstone interbedded with dusky red, thin bedded, calcareous, bio-turbated, micaceous, feldspathic, clayey and sandy siltstone in repetitive sequences 3 feet to 10 feet thick.

Groundwater is commonly found in a perched condition, with the bedrock restricting its infiltration. Groundwater flow through the bedrock is generally restricted to fractures. The weathering of the rock exposed in the fractures results in permanent mud seams that act as seepage conduits.

3.3 Loudoun County Soils Mapping

The surficial soils mapping of the site, obtained from the Loudoun County GIS system, is shown on the figure entitled "Loudoun County Soils Mapping" in Appendix A. It shows that the entire bridge is in an area containing Rowland silt loam (05A). The primary characteristics of these soils are shown in the table below:

Mapping Unit, Number, and Name	Soil Characteristics	Soil Class and Use Potential for General Development	Underlying Rock	General Depth to Rock
05A Rowland silt loam (0-3%) (C)	Very deep, moderately well to somewhat poorly drained, reddish-brown and mottled reddish-brown and gray silty and clayey soils with seasonal water tables on level terrace positions in flood plains	IV F Very poor potential; subject to flooding	Triassic shale and siltstone	>6 feet

The "Interpretive Guide to the Use of Soils Maps, Loudoun County, Virginia" rates soils as Class I, II, III, or IV. These designations (ratings) are assigned to each soil type according to the severity of soil problems and the potential difficulty of analyzing and correcting these problems. Soils rated "IV" are considered the worst and soils rated "I" are considered the best.

As shown in the above table, the site contains Class IV soils, per the latest County soils map as identified by the Interpretative Guide to Soils Maps, Loudoun County, Virginia.

3.4 Testing & Observations

The specific descriptions of the subsurface conditions and materials are shown on each individual Record of Soil Exploration (boring log) in Appendix B. Please be advised that the stratification lines between the various materials on each boring log are approximate; in situ, the transitions between indicated layer boundaries may be gradual. In addition, the ground surface elevation shown on each boring log was obtained by interpolating from the contours shown in the Loudoun County GIS records; they should be considered as approximate due to the layout procedures. A brief description and a discussion of the subsurface conditions encountered in the borings are presented below.

3.4.1 Soil Condition

The average topsoil thickness was approximately 2 inches. However, the depth of topsoil can vary. An average topsoil thickness of 6 inches should be assumed. Beneath the topsoil, FILL soils were encountered in boring B-1, and natural (undisturbed) soils were encountered in boring B-2.

Boring B-1 (Northeast Abutment)

A layer of FILL soil was observed below the topsoil in boring B-1. The FILL consisted of Sandy SILT with trace of gravel (ML) and some cobbles and it extended to a depth of approximately 5 feet below the existing ground surface. Beneath the FILL layer, natural residual soil consisting of Clayey SAND with little gravel (SC) extended to highly weathered rock which was encountered at a depth of approximately 7.5 feet. Auger refusal was observed at a depth of approximately 9 feet.

Boring B-2 (Southwest Abutment)

Beneath the topsoil, natural residual soil layers consisting of approximately 1.5 feet of Sandy SILT (ML) over 2 feet of Clayey SAND (SC) with a trace of gravel (rock fragments) and 2 feet of Clayey GRAVEL (GC-GM) extended to decomposed to highly weathered rock, which was encountered at a depth of approximately 6 feet below the existing ground surface. Auger refusal was observed at a depth of approximately 7.5 feet.

At both of the abutment locations, the fine grained natural residual soils were generally characterized as being "stiff" to "hard" and the coarse grained natural residual soils were generally characterized as being "loose" to "very dense". Two (2) Atterberg Limits tests, performed on samples of the Clayey SAND (SC) and the Clayey GRAVEL with Sand (GC-GM), yielded Liquid Limit values of 45 and 23, with corresponding Plasticity Index values of 24 and 5, respectively. Natural moisture content tests performed on samples of these soils yielded values from 7.1 to 24.3 percent.

After removing the augers, the sidewalls in both of the borings caved at a depth of approximately 4 to 5 feet. Based on the gradation and Plasticity Index values, these soils can be considered to have low to moderate shrink-swell potential.

3.4.2 Groundwater

Groundwater was not observed in either of the borings. The specific observations and depths of groundwater are contained on each individual boring log in Appendix B.

Please be advised that fluctuations in rainfall, evaporation, construction activity, surface runoff, and other site-specific factors could cause groundwater elevations at the time of construction to vary from those observed. Generally, groundwater levels are lowest (i.e., deepest) during the summer and fall months and highest (i.e., shallowest) during the winter and spring months.

4. CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this exploration and our experience in the vicinity, the site appears, from a geotechnical standpoint, to be generally suited for the construction of the replacement foundations for the pedestrian bridge. However, due to the presence of undocumented FILL soils, the potential presence of highly plastic soils, and relatively shallow depth to rock, we are of the opinion that some special considerations will be required during the planning and construction phases of the project. The following sections of this report present recommendations to be considered during the design and construction of the abutments/foundations.

4.1 Earthwork

4.1.1 Stripping and Clearing

The expanded footprint shall be cleared and grubbed, and completely stripped of all unsuitable materials such as topsoil, rootballs, and unsuitable fill soils. The expanded footprint is defined as the area that extends a minimum of 5 feet laterally outside the abutment (substructure) plus an additional 1 foot laterally for each foot of fill height from the stripped subgrade. The depth of stripping and/or undercutting shall be adjusted in the field.

4.1.2 Highly Plastic/Expansive Soils

Please note that highly plastic (expansive) soils were encountered in boring B1. Soils meeting all four (4) of the following provisions shall be considered expansive, except that tests to show compliance with Items 1, 2 and 3 shall not be required if the test prescribed in Item 4 is conducted:

1. Plasticity Index (PI) of 15 or greater, determined in accordance with ASTM D4318.
2. More than 10 percent of the soil particles pass a No. 200 sieve (75μm), determined in accordance with ASTM D422.
3. More than 10 percent of the soil particles are less than 5 micrometers in size, determined in accordance with ASTM D422.
4. Expansion Index greater than 20, determined in accordance with ASTM D4829.

Where highly plastic/expansive soils are encountered within the expanded footprint, they shall be undercut to a depth where satisfactory soils are encountered or to a depth of at least 2 feet below the subgrades of the foundations. The undercut soils shall be replaced with concrete or controlled fill consisting of properly compacted suitable material.

4.1.3 Engineered Fill/Backfill Material

After removing unstable and unsuitable materials, including any undocumented FILL soils and plastic/expansive soils, undercut areas shall be raised to the design subgrade elevation using properly compacted controlled fill or lean concrete.

The areas that may be undercut and/or may require fill to achieve the design subgrade elevation shall be raised to the design grades by placing compacted controlled fill. Satisfactory fill material shall consist of soils classified as SW, SM or SC in accordance with the Unified Soil Classification System (ASTM D2487).

The fill materials shall be free of organics, clay lumps, rock fragments greater than 4 inches, frozen soils, and other deleterious materials. All deleterious materials or unsuitable soils shall be disposed of at an off-site location or they can be placed in confined fills in landscape areas.

4.1.4 Fill Placement and Testing

Fill or backfill materials placed within an expanded footprint shall consist of compacted controlled fill. The fill or backfill shall be placed in no greater than 8-inch loose (uncompacted) lifts, and compacted to at least 98 percent of the maximum dry density at a moisture content that is within 2 points of the optimum moisture content value (Standard Proctor). However, the final 1 foot of fill beneath the subgrade shall be compacted to 100 percent of the maximum dry density.

To ensure proper compactive efforts, field density determinations shall be performed in accordance with specifications set forth in ASTM D6938 (nuclear method) or D1556 (sand cone method). These tests shall be performed at a frequency of at least two (2) per lift.

All earthwork shall be monitored on a full time basis by a Certified Engineering Technician, acting under the guidance of a Professional Engineer who is registered in the Commonwealth of Virginia.

4.2 Foundation & Abutments

Based on the results of this exploration and our experience in the vicinity, the bridge can be supported on conventional shallow foundations (continuous and/or spread footings) that rest directly upon undisturbed natural soil, controlled fill, or decomposed to highly weathered rock. Unsuitable and/or unstable fill soils shall not support new foundations. Where encountered, these unsuitable and/or unstable fill soils shall be undercut completely. Undercut areas beneath the footings may be raised to the design grades using compacted controlled fill or lean concrete.

Footings that rest on approved natural soils or controlled fill can be designed for a maximum allowable soil bearing capacity of 2500 pounds per square foot (psf). Footings that rest on decomposed to highly weathered rock can be designed for a maximum allowable soil bearing capacity of 4000 pounds per square foot (psf).

The depth of the abutment footings, unless unsatisfactory materials (including highly plastic soils or undocumented FILL soils) are encountered at the proposed subgrade, shall be a minimum of 36 inches below the lowest surrounding surface grade. The width of the abutment shall not be less than 42 inches.

The depth of the intermediate supports shall be extended to a minimum of 48 inches below the bottom of the proposed stream bed. If competent rock is encountered prior to the recommended depth, the supports shall be anchored in rock by a minimum embedment depth of 12 inches. The width of the intermediate supports shall not be less than 36 inches (square or diameter).

Proper construction procedures shall be followed to maintain the quality of the footing excavations. Footing subgrades shall be protected from precipitation, seepage, surface runoff and frost. It is recommended that the footings be cast the same day they are excavated. If this is not possible, protect the footing subgrade by placing a lean concrete mat.

Before placing the concrete, the footing subgrade shall be inspected and tested by the Geotechnical Engineer or his representative to confirm the apparent bearing capacity. The inspection shall also consist of an evaluation of the quality of the subgrade material within the footing trenches. The footing inspection shall include testing using a Dynamic Cone Penetrometer.

Where the foundations are designed and constructed in compliance with the recommendations of this report, the foundation settlements should not exceed the normally allowable settlement tolerances, which we define as differential and total settlement of ½ inch and 1 inch, respectively.

The abutments for the pedestrian bridge shall be treated as structural and critical. The abutment design shall also consider any unbalanced condition and lateral pressure. Based on the results of the field and laboratory tests, the following parameters can be used for the structural design of the abutments:

Allowable soil bearing capacity on soil (psf):	2500
Allowable soil bearing capacity on weathered rock (psf):	4000
Unit (bulk) weight (pcf):	125
Angle of internal friction (degrees):	30
Active pressure coefficient:	0.33
Passive pressure coefficient:	3
Sliding coefficient on soil:	0.35
Sliding coefficient on weathered rock:	0.45
Factor of safety against sliding:	1.5
Factor of safety against overturning:	2.0

The parameters listed above are based on the assumption that the backfill will consist of soils classified as Silty SAND (SM) or more granular, having a PI value less than 15, and containing a minimum of 20 percent gravel. The abutment backfill shall be compacted according to the requirements of Section 4.1, Earthwork.

The abutments shall be designed such that the resultant of the overturning forces remains in the central one-third of the footing. Sliding resistance can

be achieved either using a shear key and/or through the frictional forces developed at the base of the abutment.

Drainage for the proposed abutments shall be provided by placing drain tile and clean free-draining gravel (wrapped with filter fabric to avoid clogging with fines) on the retained sides.

All foundation and abutment construction shall be monitored on a full time basis by a Professional Engineer who is registered in the Commonwealth of Virginia or his designated representative.

4.3 Embankment Protection

In order to protect the bridge embankments, including the bridge abutments, from the effects of erosion and/or scour, the embankments below, beneath and adjacent to the bridge abutments, shall be protected. It is recommended that the embankments be protected using approved materials (selected based on the hydraulic characteristics of the stream channels). During the construction of the bridge, the protective materials shall be placed in such a manner as to avoid damaging the bridge foundation and/or structural members.

4.4 Excavations and Slopes

Difficulties resulting from shallow rock or dense underlying soils may be encountered. Dewatering systems such as sump pits and pumps may be required if water interferes with the excavation or construction progress.

Temporary excavations greater than 4 feet must be properly shored or sloped away from the excavation with a minimum grade of 1 horizontal to 1 vertical (1h:1v).

All excavations shall be performed in accordance with OSHA and VOSH safety regulations.

5. QUALIFICATION & CLOSING REMARKS

The subsurface conditions and materials described in this report are based on our general understanding of the proposed site development, observations during fieldwork, data obtained from the borings, results of the tests performed in the laboratory, and our experience with similar projects. This report has been prepared for the exclusive use of the Loudoun County Department of Parks, Recreation and Community Services, to assist them in the replacement of the foundation for the Ashburn Park Pedestrian Bridge in the Ashburn area of Loudoun County, Virginia. We reserve the right to provide comments and to revise our general recommendations if deemed necessary.

The recommendations are based on the limited number of borings performed. Regardless of the thoroughness of a subsurface exploration, there is always a possibility that conditions between borings will be different. In addition, the construction process itself may alter soil conditions. Therefore, experienced geotechnical personnel should observe and document procedures used and conditions encountered during construction. Our services were performed in accordance with generally accepted engineering principles and practices.

Any conclusions or recommendations that are made by others, even if they are based upon data contained in this report, are the responsibilities of those individuals.

We appreciate the opportunity to provide our services to you on this project. We look forward to providing additional services that you may require for the successful design and construction of this project. If you have any questions regarding our recommendations, or any other aspects of this report, please contact us.

Appendix A

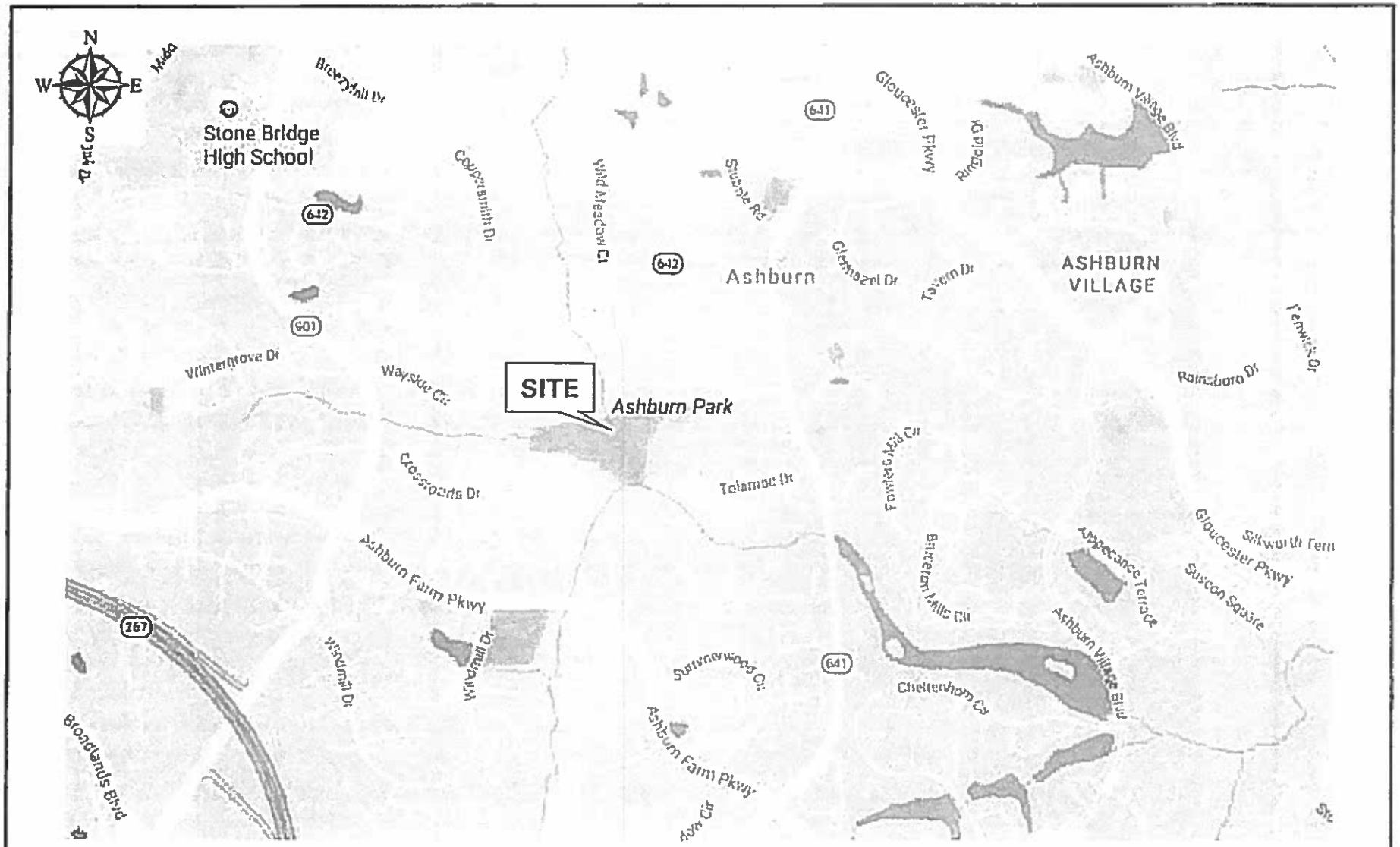
Maps and Plans

Site Vicinity Map

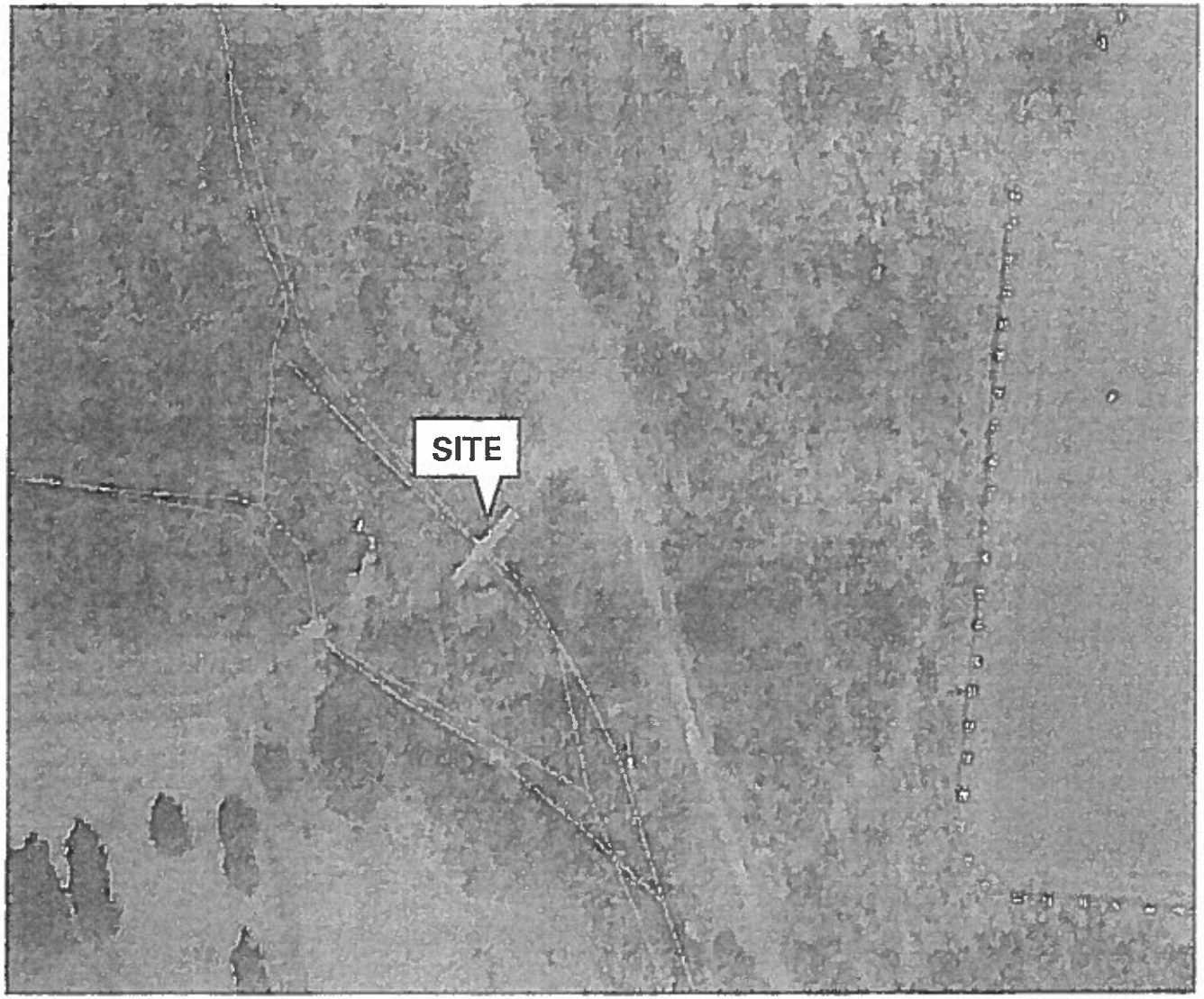
Aerial Photograph

County Soil Map

Test Boring Location Plan



E.M. TECH	SITE VICINITY MAP
Consulting Engineers	
7857 Coppermine Drive Manassas, Virginia 20109 (703) 361-9898 Fax (703) 361-6565	Ashburn Park Pedestrian Bridge Ashburn, Virginia Date: 11.9.2017 Scale: NTS



E.M. TECH

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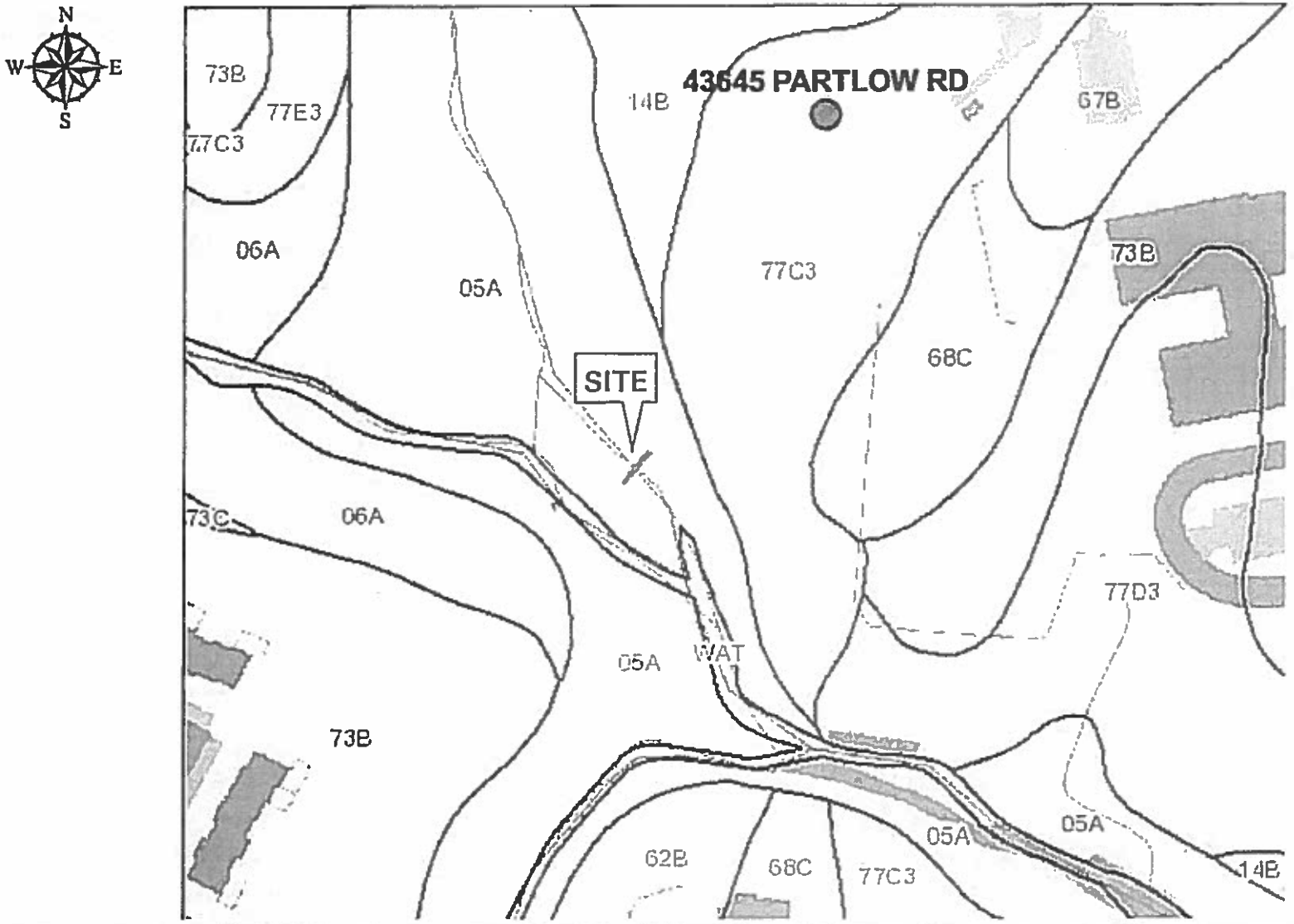
Fax (703) 361-6565

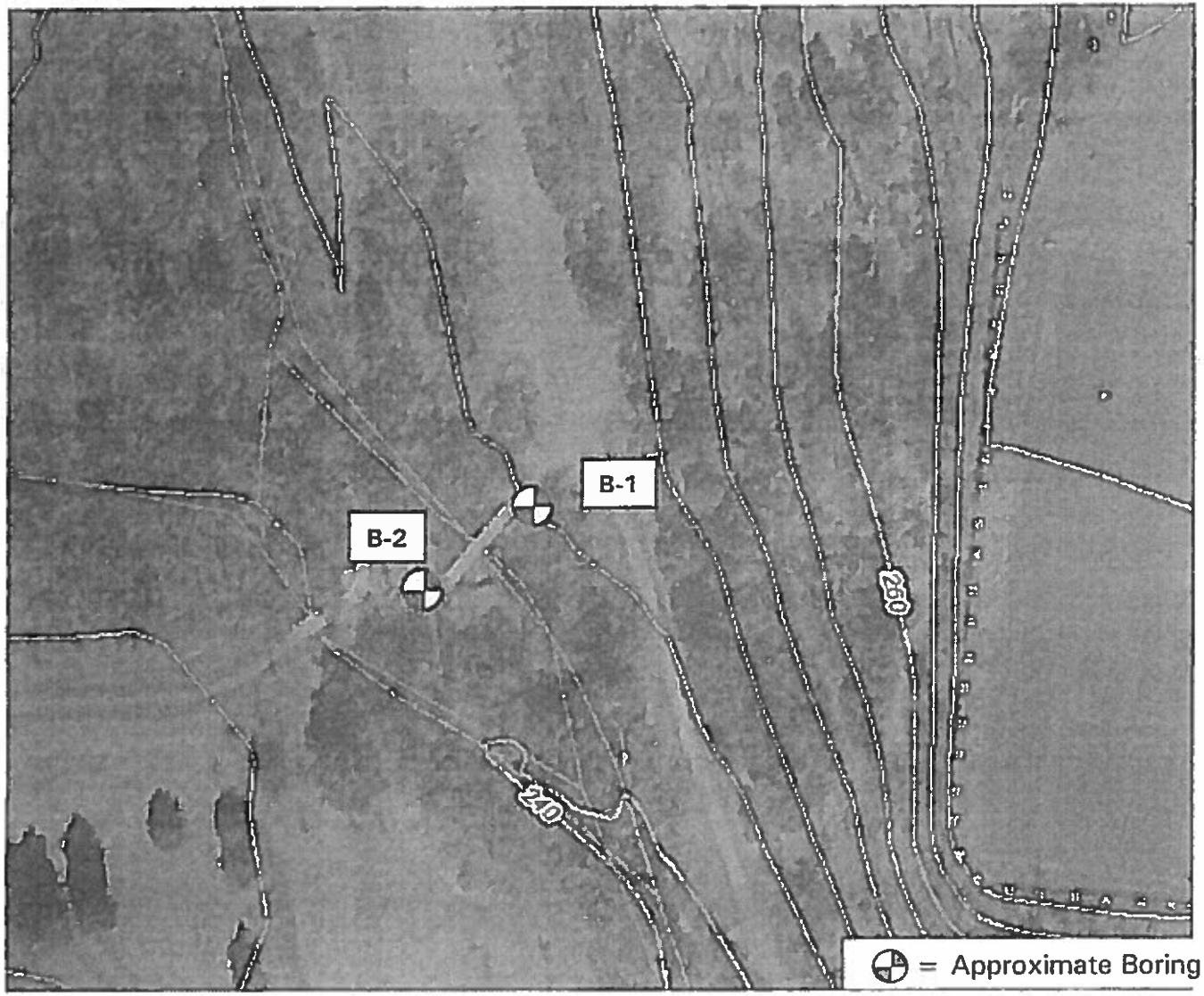
AERIAL PHOTOGRAPH

Ashburn Park Pedestrian Bridge
Ashburn, Virginia

Date: 11.9.2017
Scale: NTS



E.M. TECH *Consulting Engineers* 7857 Coppermine Drive Manassas, Virginia 20109 (703) 361-9898 Fax (703) 361-6565	COUNTY SOILS MAP Ashburn Park Pedestrian Bridge Ashburn, Virginia Date: 11.9.2017 Scale: NTS



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TEST BORING LOCATION PLAN

Ashburn Park Pedestrian Bridge
Ashburn, Virginia

Date: 11.9.2017
Scale: NTS

Appendix B

Records of Soil Exploration

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RECORD OF SOIL EXPLORATION

PROJECT NAME: Ashburn Park Pedestrian Bridge
PROJECT LOCATION: 43645 Partlow Rd, Ashburn, Virginia
DRILLING COMPANY: Recon Drilling, Inc. (NT)
PROJECT NO.: 17-3196G
ENGR./GEOL.: R. Mariscal, P.E.
DRILL RIG: CME 550 ATV
DRILLING METHOD: Hollow Stem Auger

BORING NO. B-1 (Page 1 of 1) **SURFACE ELEV.:** 244 ± (feet MSL) **TOPSOIL :** 2 ± (inches) **DATE:** 10.16.2017

STRATA Depth (ft)	STRATA Elevation± (ft)	SAMPLE Type & No.	SAMPLE Std. Penetrn. Test Blows/ 6"	SAMPLE Std. Penetrn. Test N value	SOIL or ROCK DESCRIPTION	LAB/FIELD TEST RESULTS SYM	PL	NMC %	LL	Ground-water*
0	244	SS-1	10		TOPSOIL					
			14	39	FILL: Reddish-brown, moist,			17.4		
			25		micaceous, very stiff to hard,					
					Sandy SILT with trace of gravel					
2	242				(rock fragments) some cobbles					
		SS-2	50/0"	50+	from 2.5' to 5'					
					(ML)					
4	240									
		SS-3	9		Brown, moist, dense to very					caved
			11	32	dense, Clayey SAND with little		21	19.1	45	
6	238		21		gravel (rock fragments)					
					(SC)					
					Decomposed to highly weathered					
8	236				weathered ROCK					
		SS-4	50/0"	50+						dry
					Auger Refusal					
10	234									
12	232									
14	230									
16	228									
18	226									
20	224									

NOTE/S:

	WD	BCR	ACR (immediate)	ACR (24-hr)	ACR (other)
*GROUNDWATER DEPTH (feet)	dry	dry	dry	Not available	Not available
CAVE-IN DEPTH (feet)	Not applicable	Not applicable	4.7	Not available	Not available

ACRONYMS: PL= Plastic Limit NMC= Natural moisture content LL = Liquid Limit ▽ = While drilling ▼ = After casing removal

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RECORD OF SOIL EXPLORATION

PROJECT NAME: Ashburn Park Pedestrian Bridge
PROJECT LOCATION: 43645 Partlow Rd, Ashburn, Virginia
DRILLING COMPANY: Recon Drilling, Inc. (NT)
PROJECT NO.: 17-3196G
ENGR./GEOL.: R. Mariscal, P.E.
DRILL RIG: CME 550 ATV
DRILLING METHOD: Hollow Stem Auger

BORING NO. B-2 Page 1 of 1 SURFACE ELEV.: 242 ± (feet MSL) TOPSOIL : 2 ± (inches) DATE: 10.16.2017

STRATA Depth (ft)	STRATA Elevation± (ft)	SAMPLE Type & No.	SAMPLE Std. Penetrn. Test Blows/ 6"	SAMPLE N value	SOIL or ROCK DESCRIPTION	LAB/FIELD TEST RESULTS SYM	PL	NMC %	LL	Ground-water*
0	242	SS-1	2		TOPSOIL					
			5	13	Brown, moist, stiff, Sandy SILT			14.7		
			8		(ML)					
2	240				Brown, moist, loose, Clayey					
		SS-2	3		SAND with little gravel (rock					
			2	6	fragments)			24.3		
			4		(SC)					
4	238				Reddish-brown, moist, dense to					caved
					very dense, Clayey GRAVEL					
		SS-3	50/4	50+	with Sand		18	7.1	23	
					(GC-GM)					
6	236				Decomposed to highly weathered					
					weathered ROCK					
		SS-4	50/0	50+	Highly weathered ROCK					dry
					Auger Refusal					
8	234									
10	232									
12	230									
14	228									
16	226									
18	224									
20	222									

NOTE/S:

	WD	BCR	ACR (immediate)	ACR (24-hr)	ACR (other)
*GROUNDWATER DEPTH (feet)	dry	dry	dry	Not available	Not available
CAVE-IN DEPTH (feet)	Not applicable	Not applicable	4.2	Not available	Not available

ACRONYMS: PL= Plastic Limit NMC= Natural moisture content LL = Liquid Limit ▽ = While drilling ▼ = After casing removal

Appendix C

Laboratory Results

SIEVE ANALYSIS & ATTERBERG LIMITS TESTS

Project Information:

Name: Ashburn Park Pedestrian Bridge
Number: 17 - 3196G

Material Information:

Sample Source: Boring B-1
Sample Location: Depth = 5.0' - 6.5'
Sample Description: Brown Clayey SAND with little Gravel
USCS Classification: SC
AASHTO A - 7 - 6

Test Results:

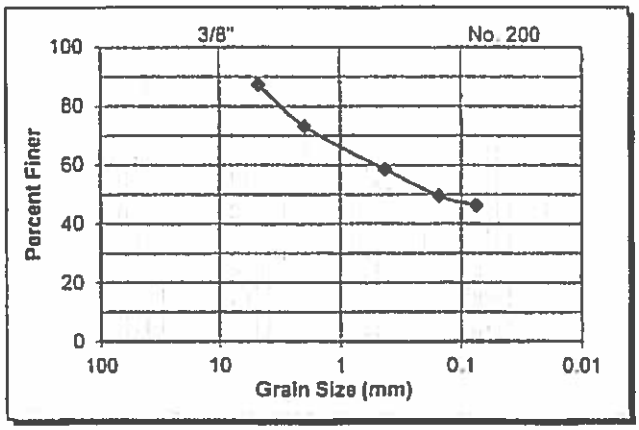
SIEVE ANALYSIS (ASTM D-422)*

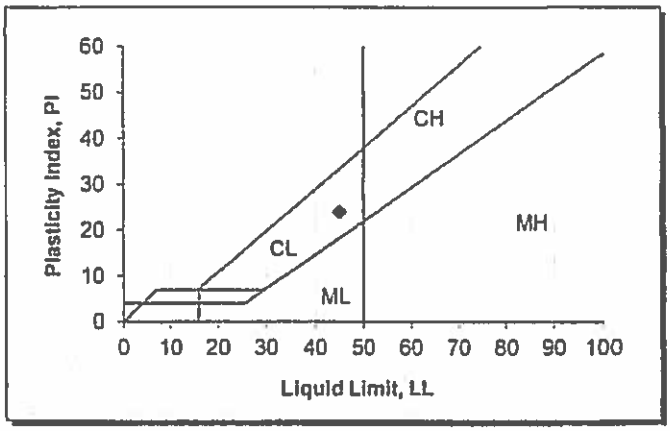
Sieve Size and No.	Percent Passing
3 inch	
2 inch	
1 inch	
3/4 inch	
3/8 inch	
No. 4	87.4
No. 10	73.2
No. 40	58.5
No. 100	49.5
No. 200	46.3

ATTERBERG LIMITS (ASTM D-4318)*

Natural Moisture Content	19.1
Liquid Limit (LL)	45
Plastic Limit (PL)	21
Plasticity Index (PI)	24

%Gravel: 12.6 %Sand: 41.1 %Fines: 46.3





Remarks: _____

Date: October 16, 2017

7857 Coppermine Drive
Manassas, VA 20109
EM TECH

*Sample preparation Method: Dry preparation per ASTM D421

SIEVE ANALYSIS & ATTERBERG LIMITS TESTS

Project Information:

Name: Ashburn Park Pedestrian Bridge
Number: 17 - 3196G

Material Information:

Sample Source: Boring B-2
Sample Location: Depth = 5.0' - 6.5'
Sample Description: Reddish-brown Silty, Clayey GRAVEL with Sand
USCS Classification: GC - GM
AASHTO A - 1 - a

Test Results:

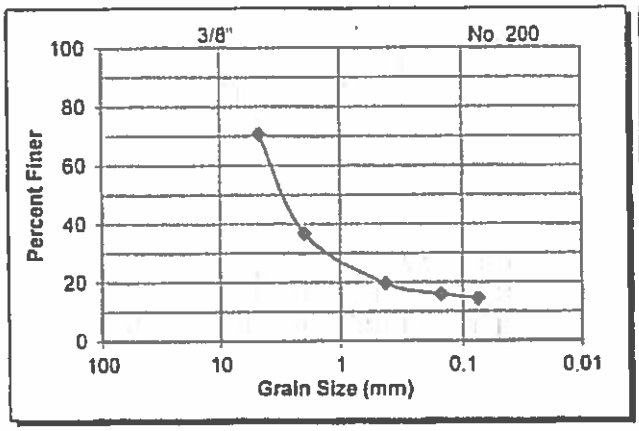
SIEVE ANALYSIS (ASTM D-422)*

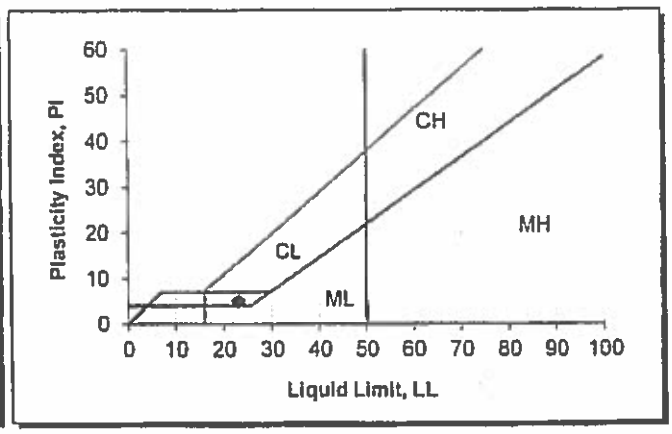
Sieve Size and No.	Percent Passing
3 inch	
2 inch	
1 inch	
3/4 inch	
3/8 inch	
No. 4	70.7
No. 10	36.8
No. 40	19.8
No. 100	16.0
No. 200	14.5

ATTERBERG LIMITS (ASTM D-4318)*

Natural Moisture Content	7.1
Liquid Limit (LL)	23
Plastic Limit (PL)	18
Plasticity Index (PI)	5

%Gravel: 29.3 %Sand: 56.2 %Fines: 14.5





Remarks:

Date: *October 16, 2017*

7857 Coppermine Drive
Manassas, VA 20109
EM TECH

*Sample preparation Method: Dry preparation per ASTM D421

ENVIRONMENTAL

WETLAND DELINEATION REPORT
ASHBURN PARK BRIDGE REPLACEMENT
LOUDOUN COUNTY, VIRGINIA

TNT PROJECT NO.: 681

FOR

TRI-TEK ENGINEERING

NOVEMBER 1, 2016

TNT ENVIRONMENTAL

November 1, 2016

Mr. Kevin Murray
Tri-Tek Engineering
690 Center Street
Suite 300
Herndon, Virginia 20170

TNT Project Number: 681

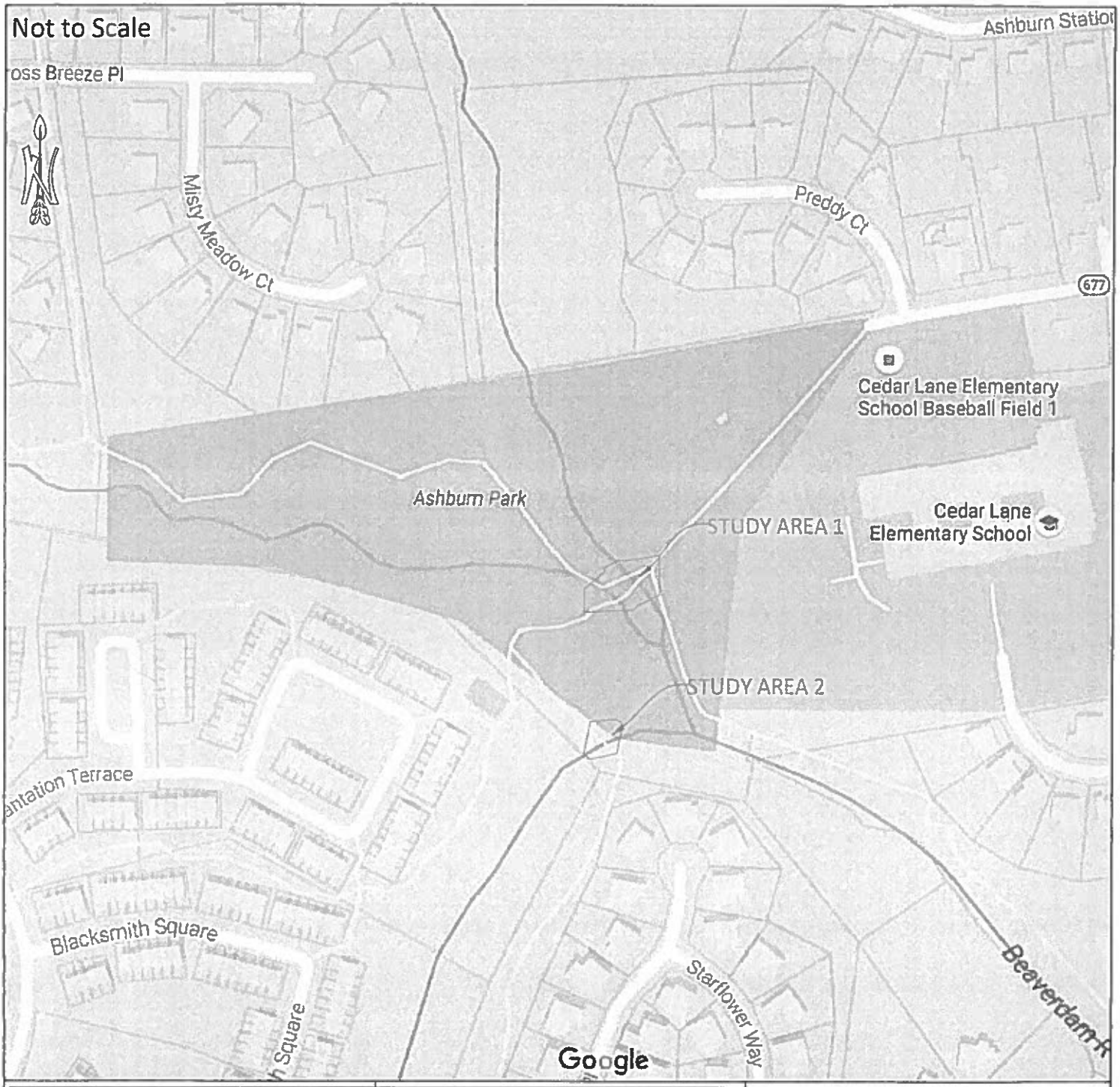
Reference: Wetland Delineation Report, Ashburn Park Bridge Replacement, Loudoun County, Virginia
Latitude: 39° 02' 17" N, Longitude: 77° 29' 36" W

Dear Mr. Murray:

TNT Environmental, Inc. (TNT) is pleased to present this wetland delineation report for the above-referenced project in general accordance with TNT Proposal Number 921-R2 dated June 17, 2016 and revised September 28, 2016. The wetlands and Waters of the U.S. identified during this investigation for the above-referenced project site were delineated by TNT based on the *Corps of Engineers' Wetlands Delineation Manual* (1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains & Piedmont Region* and represent those areas that are most likely considered jurisdictional by the U.S. Army Corps of Engineers (USACE). The delineation entails the gathering of appropriate field data according to the applicable USACE Manuals, field flagging and mapping of approximate wetland and stream boundaries located onsite, preparation of this final report, and a request to the USACE for boundary confirmation and jurisdictional determination of U. S. Waters, including wetlands, identified onsite. Based on the field investigation conducted in October 2016, there are potentially jurisdictional Waters of the U.S., including wetlands, located within the study area.

PROJECT SITE DESCRIPTION

The study area consists of three (3) existing bridge crossings along Beaverdam Run and its tributaries within Ashburn Park, in Ashburn, Virginia (*Figure 1: Project Location Map*). Ashburn Park is located at physical address 43645 Partlow Road and Loudoun County PIN: 117-40-6216. The terrain of the site consists of relatively flat to gently sloping uplands, and contains two unnamed tributaries to Beaverdam Run and a portion of Beaverdam Run, all located within the Beaverdam Run drainage basin (*Figure 2: USGS Topographic Map*). The study area also contains mature forested land and several paved pedestrian trails.



WETLAND DELINEATION ASHBURN PARK BRIDGE REPLACEMENT LOUDOUN COUNTY, VA NOVEMBER 2016	ENVIRONMENTAL **13996 PARKEAST CIRCLE** **SUITE 101** **CHANTILLY, VIRGINIA** **20151**	**FIGURE 1** SITE LOCATION MAP SOURCE: GOOGLE MAPS TNT PROJECT NO: 681

WETLAND DELINEATION ASHBURN PARK BRIDGE REPLACEMENT LOUDOUN COUNTY, VA NOVEMBER 2016	ENVIRONMENTAL **13996 PARKEAST CIRCLE** **SUITE 101** **CHANTILLY, VIRGINIA** **20151**	**FIGURE 2** USGS TOPOGRAPHIC MAP STERLING, VA QUADRANGLE MAP (2011) TNT PROJECT NO: 681

SECONDARY INFORMATION REVIEW

Secondary information entails the background research and review of recorded data and/or mapping associated with the project site. Resources reviewed include but are not limited to the following:

- U. S. Geological Survey (USGS) Topographic Map, Sterling Quadrangle, 2011
- U. S. Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI) Online Mapper, http://wetlands.fws.gov/mapper_tool.htm
- Natural Resources Conservation Service (NRCS), Electronic Field Office Technical Guide, Loudoun County Soils, www.nrcs.usda.gov/technical/efotg/
- Available aerial photography and GIS data

The USGS Sterling quadrangle map shows elevations of approximately 250 feet above mean sea level (MSL) in the northern portion of the site and approximately 250 feet above MSL in the southern portions. As shown on the USGS Map, the project site drains to unnamed tributaries to Beaverdam Run, located within the Middle Potomac-Catoctin watershed and identified as Hydrologic Unit Code (HUC) 0207008. The NWI map depicts palustrine (PFO) wetland features within the project site boundaries.

The soil survey indicates that the site is underlain primarily by 5A – Rowland silt loam, 6A – Bowmansville silt loam, 73B/C – Penn silt loam, and 77C3/D3/E3 – Nestoria channery silt loam soils. The 5A – Rowland silt loam, 6A – Bowmansville silt loam and 77C3/D3/E3 – Nestoria channery silt loam soils are classified by the NRCS as hydric.

FIELD INVESTIGATION & METHODOLOGY

Fieldwork was conducted during October 2016 using the *Corps of Engineers' Wetlands Delineation Manual* (1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains & Piedmont Region*. The USACE Manual and associated Regional Supplement follow three parameters for the identification of wetlands: dominance of hydrophytic vegetation, presence of hydric soils, and hydrologic indicators. All three parameters must be present under normal conditions for an area to be considered a jurisdictional wetland in accordance with Section 404 of the Clean Water Act. Wetlands are then further classified according to the Cowardin System as described in *Classification of Wetlands and Deepwater Habitats of the United States* (1979).

The fieldwork was conducted to evaluate and characterize the soils, vegetation and hydrology, and establish the boundaries of wetlands or Waters of the U.S. located within the area of investigation. Wetland flags were placed in the field and sequentially numbered to provide an onsite record of the location of wetlands and other Waters subject to the jurisdiction of state and federal agencies. The data sheets used in this investigation are enclosed, along with the Delineation Map showing data point locations and approximate wetland and Waters boundaries. A summary of the attached data sheets is included below in Table 3. Additionally, a photographic log documenting site conditions encountered is enclosed.

U.S. Fish and Wildlife Service

National Wetlands Inventory

Ashburn Park Bridge Replacement

October 31, 2016

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

FINDINGS

Based on our field reconnaissance, TNT has identified and located one (1) wetland and three (3) Waters of the U.S. within the two study areas. Two parallel, north to south trending unnamed perennial tributaries to Beaverdam Run are located within Study Area 1 (as shown on the enclosed Wetland Delineation Map), and flow to Beaverdam Run. A palustrine emergent (PEM) wetland is also located in the western portion of Study Area 1, and is connected and contiguous to the western tributary to Beaverdam Run. In addition, Beaverdam Run trends west to east across Study Area 2. Dominant wetland vegetation is listed below in Table 1. The main source of hydrology for these wetlands include overflow from onsite streams, surface runoff, and precipitation. The wetland is underlain by 6A – Bowmansville silt loam soil.

Table 1 – Dominant Riparian Buffer and Wetland Vegetation

Common Name	Scientific Name	Wetland Indicator*
Red Maple	*Acer rubrum*	FAC
Green Ash	*Fraxinus pennsylvanica*	FACW
Spicebush	*Lindera benzoin*	FAC
Seedbox	*Ludwigia alternifolia*	FACW
Sweet Woodreed	*Cinna arundinacea*	FACW
Spotted Ladysthumb	*Polygonum persicaria*	FACW

** The indicator status of a species indicates the probability that the species will occur in a wetland, as follows: Obligate Upland (UPL, <1%), Facultative Upland (FACU, 1-33%), Facultative (FAC, 34-66%), Facultative Wetland (FACW, 67-99%), and Obligate Wetland (OBL, >99%) in accordance with the* National List of Plant Species that Occur in Wetlands: National Summary *(2012). NI means no wetland indicator is available.*

The upland areas of the site are dominated by mature forest (listed in Table 2 below). The remaining uplands contain asphalt pedestrian trails and existing pedestrian bridges.

Table 2 – Dominant Upland Vegetation

Common Name	Scientific Name	Wetland Indicator
Slippery Elm	*Ulmus rubra*	FAC
Eastern Redcedar	*Juniperus virginiana*	FACU
Blackhaw	*Viburnum prunifolium*	FACU
Tatarian Honeysuckle	*Lindera benzoin*	FACU
Japanese Stiltgrass	*Microstegium vimineum*	FAC

Table 3 – Data Points Summary

Data Point	Hydrology	Hydrophytic Vegetation	Hydric Soils	Classification
DP-1	Yes	Yes	No	Non-Wetland
DP-2	Yes	Yes	Yes	PEM Wetland
DP-3	No	No	No	Non-Wetland

**Refer to the attached data sheets for more information*

REGULATORY DISCUSSION

The USACE - Norfolk District and the Virginia Department of Environmental Quality (DEQ) have implemented the State Programmatic General Permit (SPGP) program to streamline the permit process and avoid duplication of agency review. For those projects impacting less than 0.1-acres of non-tidal wetlands and less than 300 linear feet of stream bed a Nationwide permit from the USACE can be obtained for most projects. For those projects impacting greater than 0.1-acres of wetlands and 300-1,500 linear feet of stream bed, a General Permit can be obtained from DEQ. All SPGP permit applications are reviewed by the USACE but the permit authorization comes solely from DEQ. Notification of potential impacts should be filed with DEQ by completing the Joint Permit Application (JPA) form which is submitted to the Virginia Marine Resources Agency (VMRC) and DEQ. Upon receipt the VMRC distributes the JPA to the other resource agencies (USACE, VDEQ, etc.) for review and comment. Compensatory mitigation for unavoidable impacts to non-tidal Waters and wetlands will generally be provided at a ratio of 2:1 for forested wetlands, 1.5:1 for scrub/shrub wetlands, 1:1 for emergent wetlands, and a site-specific ratio based on the Unified Stream Methodology assessment for streams. Mitigation can include: the purchase or use of mitigation bank credits; wetland preservation; preservation of upland buffers; and in-lieu-fee contribution to the Virginia Aquatic Resources Trust Fund.

PROCEEDINGS

With your authorization, we will contact the USACE to schedule a field meeting to conduct a wetlands and Waters boundary confirmation and jurisdictional determination. This process takes an average of three to four weeks depending on the availability of USACE personnel. Once we have determined potential impacts we can assist you with permitting options and support to complete the process. In the interim, we recommend further review of state and federal agency records pertaining to Section 7 (Federal Endangered Species Act) and Section 106 (National Historic Preservation Act). These reviews will generally be required to verify compliance for either the Nationwide Permit (NWP) or General Permit conditions.

TNT would like to thank you for the opportunity to provide you with this wetland delineation. We look forward to assisting you further with this project and other environmental concerns you may have. If you have any questions, please feel free to contact us at any time at (703) 466-5123.

Sincerely,
TNT ENVIRONMENTAL, INC.

Sophie Swartzendruber
Environmental Scientist
Sophie@TNTenvironmentalinc.com

Lauren A. Duvall, PWD, PWS, ISA-CA
Senior Wetland Scientist
Lauren@TNTenvironmentalinc.com

Avi M. Sareen, PWD, PWS, ISA-CA
Principal/President
Avi@TNTenvironmentalinc.com

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Ashburn Park Bridge Replacement City/County: Loudoun Sampling Date: 10/7/16

Applicant/Owner: Tri Tek Engineering State: VA Sampling Point: DP-1

Investigator(s): B.Petru, S Swartzendruber Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: 5A - Rowland silt loam NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? ☒ Yes ☐ No

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	☒ Yes	☐ No	**Is the Sampled Area within a Wetland?** ☐ **Yes** ☒ **No**
Hydric Soil Present?	☐ Yes	☒ No	
Wetland Hydrology Present?	☒ Yes	☐ No	

Remarks:
Upland Data Point 1 taken outside of the wetland boundary near flag B-9.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☒ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	☐ Yes	☒ No	Depth (inches): -
Water Table Present?	☐ Yes	☒ No	Depth (inches): ≤18"
Saturation Present? (includes capillary fringe)	☐ Yes	☒ No	Depth (inches): ≤18"

Wetland Hydrology Present? ☒ **Yes** ☐ **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wrack lines were observed.
Wetland hydrology observed in vicinity.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: DP-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____	= Total Cover	
Sapling Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____	= Total Cover	
Shrub Stratum (Plot size: 15')			
1. Lindera benzoin	40	Yes	FAC
2. Viburnum prunifolium	10	Yes	FACU
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	50	= Total Cover	
Herb Stratum (Plot size: 15')			
1. Microstegium vimineum	30	Yes	FAC
2. Polygonum hydropiper	20	Yes	OBL
3. Polygonum persicaria	5	No	FACW
4. Bidens aristosa	5	No	FACW
5. Parthenocissus quinquefolia	5	No	FACU
6. Smilax auriculata	5	No	FACU
7. Pilea fontana	5	No	FACW
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	75	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
	_____	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation dominates the vicinity.

SOIL

Sampling Point: DP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18"	10 YR 4/4	100						Silt loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? ☐ Yes ☒ No

Remarks:

Upland soil observed in vicinity.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Ashburn Park Bridge Replacement City/County: Loudoun Sampling Date: 10/7/16

Applicant/Owner: Tri Tek Engineering State: VA Sampling Point: DP-2

Investigator(s): B.Petru, S.Swartzendruber Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: 6A - Bowmansville silt loam NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? ☒ Yes ☐ No

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	☒ Yes ☐ No	**Is the Sampled Area within a Wetland?** ☒ **Yes** ☐ **No**
Hydric Soil Present?	☒ Yes ☐ No	
Wetland Hydrology Present?	☒ Yes ☐ No	

Remarks:
PEM wetland Data Point taken inside wetland boundary at flag E-4.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☒ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	☐ Yes	☒ No	Depth (inches): -
Water Table Present?	☒ Yes	☐ No	Depth (inches): 3"
Saturation Present? (includes capillary fringe)	☒ Yes	☐ No	Depth (inches): 3"

Wetland Hydrology Present? ☒ **Yes** ☐ **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Wetland hydrology observed in vicinity.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: DP-2

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____	= Total Cover	
Sapling Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____	= Total Cover	
Shrub Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
	_____	= Total Cover	
Herb Stratum (Plot size: 15')			
1. Ludwigia alternifolia	35	Yes	FACW
2. Cinna arundinacea	25	Yes	FACW
3. Polygonum persicaria	25	Yes	FACW
4. Polygonum hydropiper	5	No	OBL
5. Parthenocissus quinquefolia	5	No	FACU
6. Boehmeria cylindrica	5	No	FACW
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
	100	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
	_____	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	_____ x 1 =	_____
FACW species	_____ x 2 =	_____
FAC species	_____ x 3 =	_____
FACU species	_____ x 4 =	_____
UPL species	_____ x 5 =	_____
Column Totals:	_____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation dominates the vicinity.

SOIL

Sampling Point: DP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18"	7.5YR 4/2	80	5YR 3/4	20	C	M	clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? ☒ Yes ☐ No

Remarks:

Hydric soil observed in vicinity.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Ashburn Park Bridge Replacement City/County: Loudoun Sampling Date: 10/7/16

Applicant/Owner: Tri Tek Engineering State: VA Sampling Point: DP-3

Investigator(s): B.Petru, S.Swartzendruber Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: 5A - Rowland silt loam NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? ☒ Yes ☐ No

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	☐ Yes	☒ No	**Is the Sampled Area within a Wetland?** ☐ **Yes** ☒ **No**
Hydric Soil Present?	☐ Yes	☒ No	
Wetland Hydrology Present?	☐ Yes	☒ No	

Remarks:
Upland Data Point 3 taken outside of wetland boundary near flag G-3.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☒ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	☐ Yes	☒ No	Depth (inches): -	**Wetland Hydrology Present?** ☐ **Yes** ☒ **No**
Water Table Present?	☐ Yes	☒ No	Depth (inches): <18"	
Saturation Present? (includes capillary fringe)	☐ Yes	☒ No	Depth (inches): <18"	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
One secondary wetland hydrology indicator observed in vicinity.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: DP-3

Tree Stratum (Plot size: 25')	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus rubra	55	Yes	FAC
2. Juniperus virginiana	25	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	80	= Total Cover	
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	
Shrub Stratum (Plot size: 15')			
1. Viburnum prunifolium	10	Yes	FACU
2. Lonicera tatarica	5	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	
Herb Stratum (Plot size: 15')			
1. Toxicodendron radicans	20	Yes	FAC
2. Polygonum persicaria	35	Yes	FACW
3. Elymus virginicus	15	No	FACW
4. Parthenocissus quinquefolia	10	No	FACU
5. Polygonum hydropiper	5	No	OBL
6. Boehmeria cylindrica	5	No	FACW
7.			
8.			
9.			
10.			
11.			
12.			
	90	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? ☐ Yes ☒ No

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation does not dominate the vicinity.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-18"	10 YR 4/4	100						Silt clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
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- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? ☐ Yes ☒ No

Remarks:

Upland soil observed in vicinity.

Photograph 1: Upstream view of the eastern unnamed tributary to Beaverdam Run, near wetland flags A-7/B-7.

Photograph 2: Downstream view of the eastern unnamed tributary to Beaverdam Run, near wetland flags A-7/B-7.

Photograph 3: Upstream view of the western unnamed tributary to Beaverdam Run, near wetland flags C-6/D-6.

Photograph 4: Downstream view of the western unnamed tributary to Beaverdam Run, near wetland flags C-6/D-6.

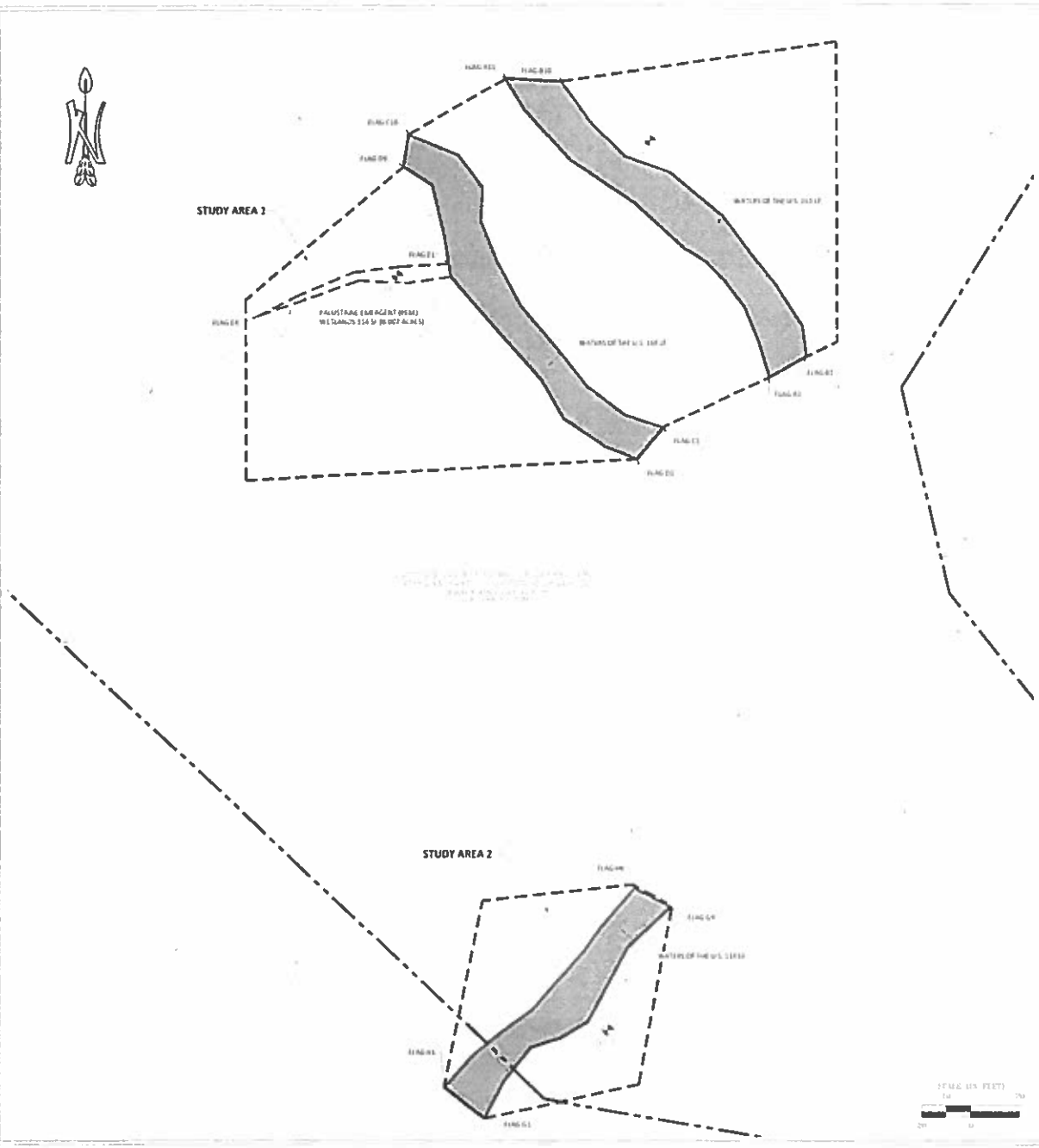
Photograph 5: Upstream view of Beaverdam Run, near wetland flags G-5/H-5.

Photograph 6: Downstream view of Beaverdam Run, near wetland flags G-5/H-5.

Photograph 7: View to the east showing Data Point 1 (Upland), taken east of the eastern unnamed tributary to Beaverdam Run, near wetland flag B-8.

Photograph 8: View to the northwest showing Data Point 2 (PEM wetland), taken west of the western unnamed tributary to Beaverdam Run, near wetland flag E-2.

Photograph 9: View to the south showing Data Point 3 (Upland), taken south of Beaverdam Run.



LEGEND

- PERENNIAL WATERS OF THE U.S. (R3)
- PALUSTRINE EMERGENT (PEM) WETLAND
- APPROX. DATAPOINT LOCATION
- STUDY AREA

NOTES:
1. THE WETLAND DELINEATION WAS CONDUCTED BY TNT ENVIRONMENTAL INC. ON 7TH TO 8TH OCTOBER 2016. THE WETLAND FLAGS WERE SURVEYED BY THE TEB ENGINEERING. EXISTING CONDITION AND TOPOGRAPHY WERE PROVIDED BY THE TEB ENGINEERING.
2. THE WETLAND AND OTHER WATERS OF THE U.S. BOUNDARIES DEPICTED HEREON ARE PRELIMINARY IN NATURE AND SUBJECT TO CONFIRMATION DURING A JURISDICTIONAL DETERMINATION BY THE US ARMY CORPS OF ENGINEERS (USACE).

Wetlands and Waters of the U.S.	Total
Perennial Waters of the U.S. (R3)	439 linear feet
Palustrine Emergent Wetland (PEM)	314 square feet (0.007 acres)

ENVIRONMENTAL
13995 Parkeast Circle, Suite 101
Chantilly, VA 20151
PH: 703-466-5123 WWW.TNTENVIRONMENTALINC.COM

County Of Loudoun

Department of Building and Development
1 Harrison St., S.E., P.O. Box 7000
Leesburg, Virginia 20177
(703) 777-0220
Web Inspection Request ***www.loudoun.gov/wairs***

The permit holder is responsible for scheduling required inspections and for assuring that final approvals are received prior to use of the building or structure.
All residential building and trade permits will be revoked three (3) years from date of issuance.
Permits may be revoked if work is abandoned for a period of six (6) months.
New permits will be required to complete any work remaining on revoked permits.
Any related zoning permits will expire with revoked permits.
When required, residential per unit cash proffers must be paid by cashier's check after all inspections have been finalized. Once received, two business days may be required for processing prior to issuance of the occupancy permit.

ZONING PERMIT # Z70301080101

Permit Issue Date :	2017-05-11	Building Permit # :	B70301080100
Applicant Name :	ASHBURN PARK	Structure Type :	COMMERCIAL OTHER
Owner name :	LOUDOUN COUNTY BOARD OF SUPERV	Construction Purpose :	OTHER
Property Address:	43645 PARTLOW RD ASHBURN VA 20147	Permit Purpose :	EXISTING PEDESTRIAN BRIDGE
		MCPI Number :	117406216000
Bldg/ Floor/ Unit:		Tax Map Number :	/79/E/7//PARK/
Section/ Lot :	SEC 4 BLK 10 LOT PARK	Contractor :	
Subdivision :	ASHBURN FARM	Related Permits :	NONE
Mechanics' Lien Agent :		Mech Lien Agent Ph # :	
Mech Lien Agent Addr :			

Permit Comments

Approved for Loudoun County Board of Supervisors for the repair and maintenance of an existing pedestrian bridge at Ashburn Park. All construction is to be consistent with the drawings as sealed by Kevin Murray on 5/8/17.

Detail Information

ZONING ORDINANCE	93
NUMBER OF ZONING DISTRICTS	1
ZONING DISTRICT- # 1	PDH4
ZONING ACREAGE	16.61
ZONING PURPOSE	REPAIR/MAINT (3) PEDESTRN BRID
NBR OF RELATED APPLICATIONS	4
RELATED APPLICATIONS NBR- # 1	SPAM-2012-0075
RELATED APPLICATIONS NBR- # 2	ZCOR-2010-0250
RELATED APPLICATIONS NBR- # 3	SPFI-1994-0025
RELATED APPLICATIONS NBR- # 4	SPPL-1994-0006
PROFFERS/CONDITIONS?	Y
ADU (YES/NO)	N
LOT TYPE	REGULAR
SPECIAL SETBACK REQMTS (Y/N)	N

Fee Calculations

Description	Units	Rate	Total
PERMIT ZONING FEE COMMERCIAL	0.00	0.0000	$210.00
PERMIT TOTAL FEE	0.00	0.0000	$210.00

Building Official

Zoning Administrator
Mark Stultz

FLOODWAY "NO-RISE / NO-IMPACT" CERTIFICATION

This document is to certify that I am duly qualified engineer licensed to practice in the State of

Virginia (*State*). It is to further certify that the attached technical data supports the fact that proposed Ashburn Park Pedestrian Bridge (*Name of Development*) will not impact the base flood elevations, floodway elevations, and floodway widths on Beaverdam Run Tributary (*Name of Stream*) at published cross sections in the Flood Insurance Study for, Loudoun County, Virginia and Incorporated Areas (*Name of community*), dated February 17, 2017 (*Date*) and will not impact the base flood elevations, floodway elevations, and floodway widths at the unpublished cross-sections in the area of the proposed development.

SEAL, SIGNATURE AND DATE

Kevin Murray
Name

President
Title

690 Center Street, Suite 300

Herndon, Virginia 20170
Address

FOR COMMUNITY USE ONLY:		
Community Approval Approved Disapproved		
Community Official's Name	Community Official's Signature	Title

☐
☐

FEMA, MT
DTD.09/2004

U.S. Army Corps
Of Engineers
Norfolk District

CERTIFICATE OF COMPLIANCE WITH U.S. ARMY CORPS OF ENGINEERS' PERMIT

Permit Number: 2016-02273

Name of Permittee: Loudoun County
Department of Building and Development

Date of Issuance: August 16, 2017

Permit Type: Nationwide Permit 18

Within 30 days of completion of the activity authorized by this permit, sign this certification and return it to the following address:

U.S. Army Corps of Engineers - Norfolk District
Northern Virginia Field Office
Attn: Mr. Ronald H. Stouffer, Jr.
18139 Triangle Plaza, Suite 213
Dumfries, Virginia 22026

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification or revocation.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit.

_____ _____

Signature of Permittee Date

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1096

Reply to
Attention of

August 16, 2017

Northern Virginia Regulatory Section
NAO-2016-02273

Ms. Gita Amiri
County of Loudoun
Department of Building and Development
1 Harrison Street SE, 3rd Floor, MSC #60
Leesburg, VA 20175

Dear Ms. Amiri:

This letter is in reference to a request, on your behalf from TNT Environmental Inc., to discharge fill material into Waters of the United States associated with the Ashburn Farm Pedestrian Bridges Project. Approximately 47 linear feet (0.02 acre) of stream bed will be impacted by the stabilization activities.

This activity has been reviewed and found to satisfy the criteria contained in the Corps Nationwide Permit Number 18. (Reissuance of the Corps Nationwide Permits was published in the Federal Register (72 FR 11092) on January 6, 2017 and the regulations governing their use can be found in 33 CFR 330 published in Volume 56, Number 226 of the Federal Register dated November 22, 1991. The Nationwide Permit can be found at www.nao.usace.army.mil/Missions/Regulatory.)

Provided the work is performed in accordance with the Application dated June 1, 2017 and the conditions of the Nationwide Permits are met, an individual Department of the Army Permit will not be required. In addition, the Virginia Department of Environmental Quality has provided 401 certification for Nationwide Permit Number 18. You may contact the Virginia Marine Resources Commission at 757-247-2200 for further information concerning their permit requirements.

This verification is valid until March 18, 2022, unless the Norfolk District Engineer uses discretionary authority to modify, suspend or revoke this verification. The Chief of Engineers will periodically review the nationwide permits and their conditions and will decide to modify, reissue or revoke the permits. If the nationwide permit verified in this letter is reissued without modification or if your activity complies with any subsequent nationwide permit, the expiration date of this verification will not change. However, if the nationwide permit verified in the letter is modified or revoked so that the activity listed above would no longer be authorized and you have commenced or are under contract to commence the work, you will have twelve months from the date of that permit change to complete the activity. Activities completed under the authorization of a nationwide permit which was in effect at the time the activity was completed continue to be authorized by that nationwide permit. It is your responsibility to remain informed of changes to the nationwide permits. We will issue a special public notice announcing any changes to the nationwide permits when they occur.

If you have any questions, please contact me at ron.h.stouffer@usace.army.mil or 757-201-7124.

Sincerely,

Ronald H. Stouffer, Jr.
Environmental Scientist
Northern Virginia Regulatory Section

Enclosure

cc: TNT Environmental Inc.

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION:

A. REPORT SUBMITTAL DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): November 17, 2016

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:

Applicant:
Tri-Tek Engineering
Attn: Mr. Kevin Murray
690 Center Street, Suite 300
Herndon, VA 20170

Agent:
TNT Environmental
Attn: Ms. Lauren Duvall
13996 Parkeast Circle, Suite 101
Chantilly, VA 20151

C. DISTRICT OFFICE: Norfolk District FILE NUMBER: NAO- 2016-2273

FILE NAME: Ashburn Park Bridge Replacement

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:

State: VIRGINIA County/parish/borough: Loudoun City: n/a

Center coordinates of site:

Latitude: 39° 2' 17" N Longitude: -77° 29' 36" W

Universal Transverse Mercator: n/a

Name of nearest waterbody: Beaverdam Run

Identify (estimate) amount of waters in the review area:

Non-wetland waters: ± 439 linear feet

Cowardin Class: R3

Stream Flow: n/a

Wetlands: ± 0.07 acre

Cowardin Class: PEM

Name of any water bodies on the site that have been identified as Section 10 waters: Tidal: n/a

Non-Tidal: n/a

E. REVIEW PERFORMED FOR SITE EVALUATION:

☐ Office (Desk) Determination Date:
☒ Field Determination Date: December 16, 2016

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative

appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

3. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA:

Data reviewed for preliminary JD (check all that apply) - checked items should be included in case file and, where checked and requested, appropriately reference sources below.

☒Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:

☒Data sheets prepared/submitted by or on behalf of the applicant/consultant.

☒Office concurs with data sheets/delineation report.

☐Office does not concur with data sheets/delineation report.

☐Data sheets prepared by the Corps:

☐Corps navigable waters' study:

☐U.S. Geological Survey Hydrologic Atlas:

☐USGS NHD data.

☐USGS 8 and 12 digit HUC maps.

☐U.S. Geological Survey map(s). Cite scale & quad name:

☐USDA Natural Resources Conservation Service Soil Survey.

Citation:

☐National wetlands inventory map(s). Cite name:

☐State/Local wetland inventory map(s):

☐FEMA/FIRM maps:

☐100-year Floodplain Elevation: (National Geodetic Vertical Datum of 1929)

☐ Photographs: ☐Aerial (Name & Date):

Or ☐Other (Name & Date):

☐Previous determination(s):

File no. and date of response letter:

☐Other information (please specify):

Signature
Regulatory Project Manager
(REQUIRED)

23 January 2017
Date

Signature of person requesting
Preliminary JD
(REQUIRED, unless obtaining the signature is impracticable)

1/24/17
Date

DECKING MATERIAL: **TREX COMPOSITE DECKING, SLIP RESISTANT MARINE GRADE.**

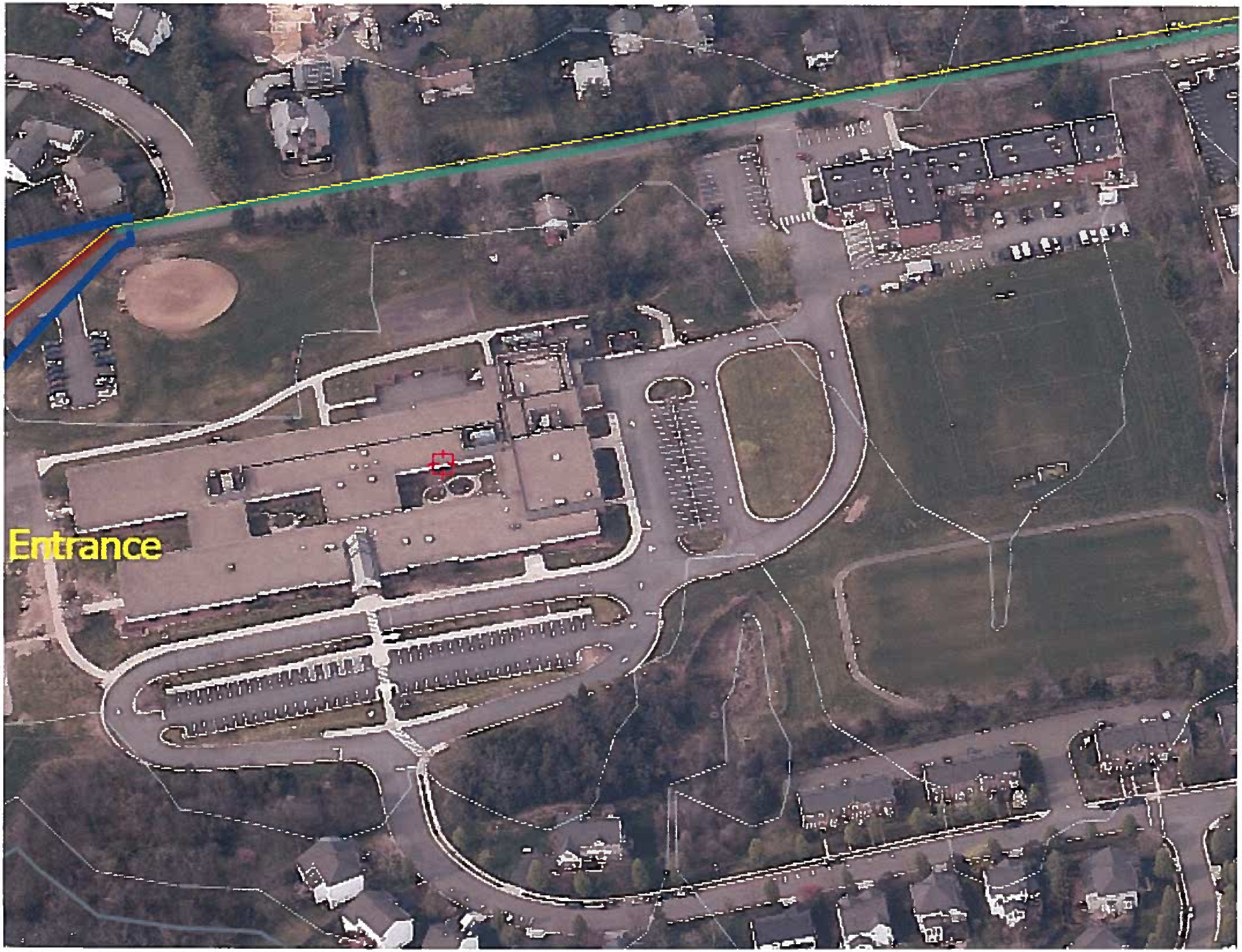
COLOR:**TO BE DETERMINED BY THE OWNER.**

2" SQUARE EDGE BOARD

ACTUAL DIMENSIONS

- 2 x 6: 1.3 in x 5.5 in (33 mm x 140 mm)

Our square edge boards install traditionally like wood – with deck screws. 2 x 6 boards available in 12', 16', and 20' lengths.


Entrance

Guardrail detail


Distance: 50.12 Feet